
A Multi-Dimensional Model for PSYOP Measures of Effectiveness

By Robert L. Perry

Editorial Abstract: *The author examines an imperative need to predict, recognize, and measure convincing evidence of PSYOP and IO effects. He describes the limitations of current assessment methods, and offers a comprehensive, multiple variable, continuous interaction model that will produce different effects over time.*

“MNC-I conducted very effective PSYOP encouraging noncombatants to leave the city and persuading insurgents to surrender. These doctrinal psychological operations might have been the most important aspect of our operations to defeat the enemy in Fallujah, as some estimates showed that 90 percent of the noncombatants departed the city.”¹

The quote gives significant credit to Psychological Operations (PSYOP) for a major victory in Operation Iraqi Freedom. But how do we know for sure? The actual information in the quote, and the large Information Operations effort of which the PSYOP was one part, shows the difficulty of measuring the actual effects of PSYOP—or any IO campaign for that matter. In the actual effort, the well-known Operation Al Fahr (also known as the second battle of Fallujah), LTG Thomas F. Metz, the Commander, insisted that all forces develop “courses of action to mass effects in the information domain” by “synchronized, integrated, and complementary actions.”²

His highly complex IO campaign before, during, and after kinetic actions raises the inherent difficulty that this article seeks to address: researching and assessing measures of effectiveness (MOE), in a dynamic environment with multiple sources of influence (both kinetic and non-kinetic) on human behavior.³

For many years, PSYOP has been criticized, their potential positive effects misunderstood, their methods underutilized—and their results discredited—in part because “their actual effects are so difficult to observe

and quantify,” stressed Christopher J. Lamb.⁴ A long term significant factor has been developing, applying, and assessing meaningful MOEs that accurately reflect whether or not a PSYOP significantly influenced an adversary to engage in a desired behavior. Among the many factors (lack of intelligence resources for effective early planning and lack of resources for effective post-operation assessment) contributing to the MOE problem: the high expectation often placed on seeking “cause and effect” relationships in highly complex situations. This article explores the shibboleth of the “cause and effect quandary,” then suggests a flexible three-dimensional model that might be analyzed in more depth, and tested to determine its usefulness in providing a more robust view of PSYOP effects.

The 2006 Joint Publication 3.0, *Joint Operations*, defines a measure of effectiveness as “a criterion used to assess changes in the system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect.”⁵ It defines an MOE as a criterion, a standard of judgment. This critical word *choice* means that designing meaningful PSYOP MOEs is affected by the standards of judgment used to measure the desired outcomes. Following through with the Fallujah example, the commander stated one of his objectives was to “remove noncombatants from the town.” Designing an MOE to meet that objective would require a PSYOP officer to clearly understand what the commander meant by ‘remove’ and ‘non-combatant.’ He could gain that information from the

commander’s written intent and desired end states, or he could ask the CDR for specific parameters. How many—quantity—will have to leave to meet the commander’s intent: 100% of all persons not carrying weapons, 80% of women, children, and men over age 60, etc? How far from Fallujah—distance—should they go to be considered “removed?” How long should they stay away—persistence? The answers to these questions establish the standards of judgment; they make assessing PSYOP results easier because they can be defined, their attributes analyzed, and their parameters/bounds determined. As a standard of judgment, MOE offers a way to explore more broadly and more deeply the relationship between a PSYOP action and its effects and be better able to account for the observed results and their persistent effects.

The core issue, as Carrie Gray and Edwin Howard jointly and David Grohoski separately acknowledge, is the ability to predict, recognize, and measure in some meaningful way and provide convincing evidence that PSYOP caused effects, or these were significantly influenced by non-kinetic PSYOP actions.⁶ The “ability to assess effectiveness of an information operation [and PSYOP by inclusion] is limited because there may be no immediately observable effects, and even if an effect is observed, it may be difficult to relate the effect directly to the IO capability employed.”⁷ In short, the authors assert that even if something happens during a PSYOP campaign, it is difficult to prove the campaign caused it.

Grohoski asks the fundamental question for IO and its PSYOP capability:

“lacking physical evidence, how can we quantify the intangible attributes of the information environment (IE) to assess the effectiveness of IO?”⁸ He defines the IE as a “combination of physical assets and non-physical concepts.”⁹ Attacking that combination with a variety of kinetic and non-kinetic actions produces effects ranging from tangible (destroyed buildings), to intangible (confused decision making).¹⁰ Grohoski suggests every IO campaign seeks to achieve a hierarchy of first-, second-, and third-order effects: first order “destruction, degradation, and disruption of enemy signal nodes and command posts;” to create second order effects against enemy information processes to achieve the third order effect; change in the “enemy commander’s decision making (i.e., the ultimate target of IO).”¹¹

Gray and Howard approach Grohoski’s question from a traditional military assessment hierarchy:

- Measure of merit (MOM): Much like a MOP, it is the result of an observable, measurable action—message dissemination.

- Measure of objective (MOO): Also based on observation, it answers the question whether or not, for whatever actual causes, the target audience (receivers of the PSYOP message or action) performs the desired behaviors, and the commander’s objectives are achieved during or after the PSYOP effort.

- MOE: Based on intangible and indirect responses, an MOE answers the question whether or not there is a direct linkage between the message received and the performance of the desired behavior.¹²

Although Gray and Howard assert it is very difficult to prove that connection, Grohoski’s methodology asserts one can use deductive reasoning to show correlation (but not causation) occurs when the impact of an action increases or decreases, while the extent of the effect increases or decreases.¹³ Falling back on the adage ‘correlation does not imply causation,’ all three researchers assume one cannot prove direct cause and effect, because there may be hidden

or confounding factors that contribute to a result.

However, the cause-and-effect quandary may require us to jump through a wider hoop. In human interactions, the inputs/influences (moderating variables) often are so numerous and so coincidental that proving direct causation of an effect or behavior (dependent variable) is very difficult. This quandary is known as the “Fundamental Problem of Causal Inference—it is impossible to directly observe causal effects.”¹⁴ However, Bradford Hill offers seven criteria that PSYOP teams can use both in planning and assessing, to help



PSYOP Senior NCO in Baghdad distributes news, wonders how well the plan is working. (US Navy)

them determine whether their efforts contributed significantly to the observed behaviors.¹⁵

- Strength of the association between the PSYOP and the effect/behavior.
- Dose-response effect: Behavior changes in a meaningful way with the change in the level of the theoretical cause.
- “Lack of temporal ambiguity: The hypothesized cause precedes the occurrence of the effect.”¹⁶
- Consistency of results: A series of the same PSYOP method(s) designed

to produce the same desired behaviors produces similar results.

- “Theoretical plausibility: The hypothesized causal relationship is consistent with current... theoretical knowledge.”¹⁷

- Coherence of evidence: The results do not contradict or call into question accepted facts about the desired behavior.

- “Specificity of the association: The observed behavior is associated with only the suspected cause (or few other causes that can be ruled out).”¹⁸

Hill stresses one does not have to have perfect alignment of all seven to infer a cause-effect relationship. If over time and with diligent research you can successfully apply these criteria to PSYOP assessments, the more likely (though never perfectly able) you will be to assess that a PSYOP method significantly contributed to observed behaviors. In short, “correlation is not causation, but it sure is a hint.”¹⁹

Multi-Dimensional Model for Considering the Effectiveness of PSYOP

In addition to the cause-and-effect issue, this article asserts that part of the problem has been—besides the lack of understanding of and unrealistic expectations for what PSYOP can and cannot actually do—the penchant for PSYOP assessment to rely on two-dimensional assessments of a multi-dimensional problem. The ordered effects and MOM-MOO-MOE hierarchies noted above are two-dimensional and linear, rather multi-dimensional and spatial. Rather than focus on whether PSYOP A caused Behavior B in a linear fashion, PSYOP assessment should focus on PSYOP as multi-dimensional, multiple variable, continuous interaction that will produce different effects over time. Given multiple actors in dynamic circumstances, did PSYOP A, B, and C significantly affect Behaviors X, Y, and Z with what strength (force), for how long (persistence), with what intended and unintended consequences?

Every PSYOP operates in multiple dimensions along interactive continua.

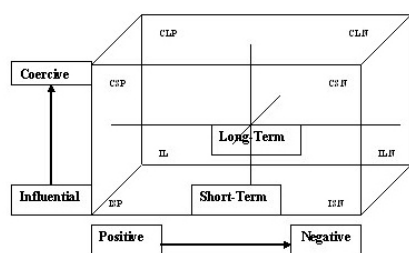


Chart 1: Three-Dimensional Model for Measures of Effectiveness

ISP = Influential, Short-term, Positive Effect
CSP = Coercive, Short-term, Positive Effect
ILP = Influential, Long-term, Positive Effect
CLP = Coercive, Long-Term, Positive Effect

ISN = Influential, Short-term, Negative Effect
CSN = Coercive, Short-term, Negative Effect
ILN = Influential, Long-term, Negative Effect
CLN = Coercive, Long-term, Negative Effect

In the following model, the effect of a message (independent variable) on consequences or observed behaviors (dependent variable) depends on the other dimensions/factors (moderating variables).²⁰ The PSYOP officer needs to assess whether the observed effects occur in the positive direction he intended with his message, the approximate degree to which his message actually influenced the target audience, and the persistence with which the effects last, and whether positive or negative unintended consequences impacted the outcomes, etc. This article proposes the following most critical dimensions/variables for PSYOP assessment:

- Type of non-kinetic method: Influence to Coercion (ranging from persuasive message to threat of violence. Actual violence is out of the realm of PSYOP, but obviously can be combined with PSYOP to create desired effects.)

- Complexity of method: Simple to Complex (one leaflet drop to multiple products/methods)

- Frequency: One simple occurrence to a complex campaign with multiple messages over weeks or months

- Location: One neighborhood/area to multiple locations over a broad area, even global

- Duration of effect: Short term to long term: Momentary to continuous and lasting.

- Consequences/Effects: Positive Intended—desired behaviors to Negative Unintended—negative, unplanned behaviors.

Key Difference with New Model

This model offers a critical difference versus other approaches: it accounts for both positive unintended consequences, and negative unintended consequences. Of course, no one plans to achieve negative intended effects. However, one must include positive and negative unintended effects, if for no other reasons than to gather comprehensive and accurate data, and be able to assess the relationships among all methods and effects. Then, coincidentally successful or failed methods can be tested in similar situations to determine whether the unintended positive results can be duplicated—and unintended negative ones avoided—by deliberate PSYOP.

It appears current assessment methods either ignore, consider good or bad luck, or attribute external factors beyond their control as causing both unintended positive and negative consequences. Rather, PSYOP evaluators need to examine closely these surprises to glean additional data that can inform the cause-and-effect or correlational relationships.

Multi-Dimensional Model

With complex interactions of multiple variables and the difficulties of providing prompt, accurate assessments of necessarily inexact MOEs, this multi-dimensional model may provide an expeditious way for PSYOP officers to analyze both their short- and long-term results. A three-dimensional model can accommodate the critical variables and allow PSYOP evaluators to plot actual results within these dimensions.

One version of the model shows a three-dimensional box divided into quadrants: The X horizontal axis plots the consequences/observed behaviors, either positive or negative. The Y horizontal axis is the time continuum or duration of the PSYOP. The Z vertical axis is the type of PSYOP effort on the influence-coercion continuum. The

eight corners of the box reflect the eight extremes that a PSYOP effort could produce (See Chart 1):

- Most positive = Influence method, Short-Term, Positive (ISP) along the horizontal x-y axis at the X/Y nexus (0/0 scale) across time to Influence method, Long-Term, Positive (ILP). $ISP > ILP$ = positive space.

- Most negative = Coercion method, Short-Term, Negative (CSN) to Coercion, Long-Term, Negative (CLN). $CSN > CLN$ = negative space.

Being based on influence short of violence, PSYOP does use coercive, short- or long-term methods (threat of violence) to achieve positive effects, often in combination with kinetic operations, so the model reflects this approach with the $CSP > CLP$ continuum, that is, from coercion with short-term positive effects to coercion with long-term positive effects. In sum, Chart 1 shows that the left half of the cube reflects various strengths of positive results while the right half reflects various strengths negative results. One could also “add another slice” to the model across the middle—an X2 axis—to add intended and unintended consequences, both positive and negative.

Utility of the Model

With this model a PSYOP team can plot the results of a unit’s actions, because every effort has more than one outcome—which always occur over time. The resulting scattergram can help clarify the relationships between the types of effort and their actual consequences. It can show the “direction of the association.”²¹ For example, an influence campaign over three months

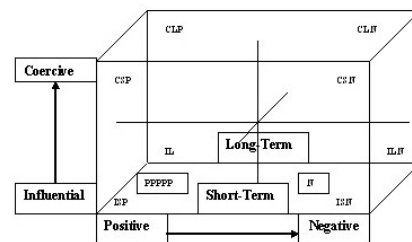


Chart 2: Example of Consequences Plotted on Three-Dimensional Model

P = Positive outcomes

N = Negative outcomes

(medium length effort) with four messages sent numerous times produces five intended positive behaviors, while it generates only one mildly negative consequence. The positive values would be graphed in the lower middle of the positive ISP-ILP quadrant, while the mildly negative consequence would be plotted at the middle of the graph. As the ongoing results of the effort are plotted over time, clusters begin to show the “shape” of the relationship, and the strength of the association among the variables becomes apparent. (See Chart 2.)²²

If the same or similar unintended negative consequences are found to cluster around a type and timing of a method (short-term, coercive methods produce consistent negative reactions), an assessment team can analyze the situation in more depth and take action. Perhaps more important, an assessment team can review the historical record, plot the available data, and create a graphic view. This allows them to zero in on the types of efforts that both succeed and fail over time, and better guide future planning efforts.

This model is also flexible, in that as long as one keeps the dependent variable of positive-negative consequences and the independent variable of type of PSYOP (influence-coercion), an analyst can substitute different moderating variables, such as complexity, frequency, and location, among others, to conduct a deeper and broader analysis. With the different plots, one can overlay the resulting graphs to identify if, when, where, and how the various PSYOP maximize positive consequences and minimize negative ones.

This model has a number of limitations:

1) It depends on gathering accurate data about the outcomes. For example, how do you survey the people who left Fallujah to determine whether PSYOP influenced them?

2) It depends on the evaluator’s accurate interpretation of those data.

3) Taken alone, the model does not adequately consider the effects of confounding variables (hidden factors

that affect the outcome). Statistical analysis can do so.

4) It depends on analysts having the time and resources to plot the data and interpret the results.

5) It needs to be tested with historical data and statistically verified for reliability and validity.

6) It depends on accurate understanding of the commander’s objectives and desired end states, in relatively quantitative terms, although part of the model’s flexibility is that it can tolerate some ambiguity because of the spatial clustering of the plotted results.

7) An analyst must be able to judge degrees of success.

8) It is based on “an assumption that you can actually identify substantially all consequences” and it is useful “only for narrowly defined situations with sought-after effects.”²³

The long-considered, thorny problem of designing, applying, and assessing useful MOEs can be approached from a different point of view. Human interactions always have multiple causes, multiple influences, and multiple consequences, which are always more or less difficult to identify, measure, and evaluate. The PSYOP community should be less concerned with living up to virtually impossible standards that others set, and more concerned with identifying more clearly what their actions actually can accomplish: desired effects. Further, PSYOPers should demonstrate the range of those accomplishments more often. The multi-dimensional model offered here is a starting point for discussing the need to move MOE assessment away from its limited, linear methodology to a multi-dimensional approach that can account for the multiple variables. In short, the PSYOP community should seize the initiative from the MOE naysayers, and establish its own standards for assessing MOEs that reflect the sophistication and complexity of PSYOP, and the range of results and outcomes.

The False Dilemma of Correlation and Causation

The difficulty with devising MOEs is often cast as the difficulty in

proving that unlike in kinetic action (with its quantifiable battle damage assessment methods), a PSYOP effort “causes” the observed behavior. Here are Hill’s suggested seven criteria for assessing “cause and effect” explained in more detail, to help better understand how to apply the criteria to PSYOP assessments:

- “Strength of the association: The stronger the association appears over a series of different studies, the less likely the association is spurious [Author’s note: that is, ‘coincidental’] because of bias.”²⁴ Note this criterion requires regular assessments to gauge any change, preferably with a control group.

- Dose-response effect: The behavior variable changes in a meaningful way with the change in the level of the theoretical cause. The dose-response effect is especially useful in PSYOP because it allows the PSYOP team to focus on the impact (change) of one influence method (dose).²⁵

- “Lack of temporal ambiguity: The hypothesized cause precedes the occurrence of the effect.”²⁶ That is, the desired change in behavior happens after the PSYOP campaign; of course, that means one must establish a baseline, as Barklay stressed.²⁷

- Consistency of results: A series of the same PSYOP method(s) designed to produce the same desired behaviors produces similar results. Beware that such situations may include the same flaws: coincidences, a common cause for both the method and the result; and other unknown causal factors, confounding factors that affect the results.²⁸

- “Theoretical plausibility: The hypothesized causal relationship is consistent with current... theoretical knowledge.”²⁹ Of course, the current knowledge may not be adequate to accurately explain the theoretical relationship.

- Coherence of evidence: The results do not contradict or call into question accepted facts about the dependent variable, that is, the desired behavior.³⁰ If long PSYOP experience has shown that leaflet drops can influence enemy morale on the front lines, then it may be more likely than not that another leaflet

drop on a frontline enemy will influence their morale.

• “Specificity of the association: The observed effect [behavior] is associated with only the suspected cause (or few other causes that can be ruled out).”³¹ That is, the more closely you can relate the observed behavior to only your PSYOP actions, the more likely these caused the behavior.

We must also stress that you do not have to have perfect alignment of all seven to infer a cause-effect relationship. If you can—over time and with diligent research—successfully apply these criteria to your PSYOP assessments, the more likely (though never perfectly able) you will be to assess that a PSYOP method contributed significantly to observed behaviors. In short, “correlation is not causation but it sure is a hint.”³²

Notes

¹ Thomas F. Metz, Mark W. Garrett, James E. Hutton, and Timothy W. Bush, “Massing Effects in the Information Domain: A Case Study in Aggressive Information Operations,” *Military Review*, May-June 2006, 8.

² Ibid, 6.

³ MOEs contrast with measures of performance (MOPs); MOPs measure whether the planned actions actually occurred as planned—a leaflet drop on at a village disseminated the planned number of leaflets at the right time on the right village.

⁴ Christopher J. Lamb, “Review of Psychological Operations Lessons Learned from Recent Operational Experience” (Washington, DC: National Defense University Press), September 2005.

⁵ Joint Chiefs of Staff, Joint Publication 3-0, *Joint Operations* (Washington, DC: 17 September 2006), GL-22.

⁶ Carrie Gray and Edwin Howard, “IO MOE Development and Collection: A Paradigm Shift,” *IO Sphere*, Spring 2005, 38. David C. Grohoski, “Measures of effectiveness in the information

environment,” *Military Intelligence Professional Bulletin*, July-September 2003, http://findarticles.com/p/articles/mi_m0IBS/is_3_29/ai_106699529/print (accessed September 7, 2007).

⁷ Gray and Howard, “IO MOEs,” 38-9.

⁸ Grohoski, “Measures of Effectiveness.”

⁹ Ibid.

¹⁰ Ibid.

¹¹ Ibid.

¹² Gray and Howard, “IO MOEs,” 38-9.

¹³ Ibid.

¹⁴ “Correlation does not imply causation.” http://en.wikipedia.org/wiki/Correlation_does_not_imply_causation (accessed 14 October 2007).

¹⁵ Hill, A. Bradford. *Principles of Medical Statistics*, 9th ed. (New York: Oxford University Press).

¹⁶ Ibid

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Tufte, Edward R. *The Cognitive Style of PowerPoint: Pitching Out Corrupts*. Within <http://www.edwardtufte.com/tufte/powerpoint> (Cheshire, CT: Graphics Press), 2006.

²⁰ Monique Mitchell Turner, Ph.D., University of Maryland Communication Department, College Park, MD, electronic mail message to author, 12 October 2007.

²¹ “Scatterplots,” <http://www.math.sfu.ca/~cschwarz/Stat-301/Handouts/node47.html> (accessed 14 October 2007).

²² Ibid.

²³ Richard Fravel, Chief Operating Officer, National Geospatial-Intelligence Agency, interview with the author, 5 October 2007.

²⁴ “Principles of causation,” <http://www.math.sfu.ca/~cschwarz/Stat-301/Handouts/node47.html> (accessed 14 October 2007).

²⁵ Ibid.

²⁶ Ibid

²⁷ Chadwick Barklay, LTC, 2nd PSYOP Group, US Army Reserves, interview with the author, 28 September 2007.

²⁸ “Principles of Causation.”

²⁹ Ibid.

³⁰ Ibid.

³¹ Ibid.

³² Tufte, Edward R. *The Cognitive Style of PowerPoint*. 